

### *Amendments to the Claims*

This listing of claims will replace all prior versions and listings of claims in the application.

1. (currently amended) A composition comprising:
  - (a) a core particle with at least one first attachment site, wherein said core particle is a virus-like particle of an RNA-bacteriophage; and
  - (b) at least one antigen or antigenic determinant with at least one second attachment site,

wherein said antigen or antigenic determinant is a A $\beta$ 1-6 peptide, and wherein said second attachment site being selected from the group consisting of:

- (i) an attachment site not naturally occurring with said antigen or antigenic determinant; and
- (ii) an attachment site naturally occurring with said antigen or antigenic determinant,

wherein said second attachment site ~~is capable of association to said first attachment site,~~ associates with said first attachment site through at least one non-peptide bond, and wherein said A $\beta$ 1-6 peptide and said core particle interact through said association to form an ordered and repetitive antigen array.

Claims 2-5. (cancelled)

6. (currently amended) The composition of claim ~~3~~ 1, wherein said virus-like particle of an RNA-bacteriophage comprises, or alternatively consists of, recombinant proteins, or fragments thereof, of an RNA-bacteriophage.

7. (currently amended) The composition of claim 6, wherein said RNA-bacteriophage is selected from the group consisting of:

- (a) bacteriophage Q $\beta$ ;
- (b) bacteriophage R17;

- (c) bacteriophage fr;
- (d) bacteriophage GA;
- (e) bacteriophage SP;
- (f) bacteriophage MS2;
- (g) bacteriophage M11;
- (h) bacteriophage MX1;
- (i) bacteriophage NL95;
- (k) bacteriophage f2;
- (l) bacteriophage PP7; and
- (m) bacteriophage AP205.

8. (currently amended) The composition of claim 3-1, wherein said virus-like particle of an RNA-bacteriophage comprises, or alternatively consists of, recombinant proteins, or fragments thereof, of RNA-bacteriophage Q $\beta$ .

9. (withdrawn - currently amended) The composition of claim 3-1, wherein said virus-like particle of an RNA-bacteriophage comprises, or alternatively consists of, recombinant proteins, or fragments thereof, of RNA-bacteriophage fr.

10. (withdrawn - currently amended) The composition of claim 3-1, wherein said virus-like particle of an RNA-bacteriophage comprises, or alternatively consists of, recombinant proteins, or fragments thereof, of RNA-bacteriophage AP205.

11. (currently amended) The composition of claim 6, wherein the recombinant proteins comprise, or alternatively consist essentially of, or alternatively consist of coat proteins of RNA-bacteriophages.

12. (currently amended) The composition of claim 11, wherein said coat proteins of RNA-bacteriophages having an amino acid are selected from the group consisting of:

- (a) SEQ ID NO:4;
- (b) a mixture of SEQ ID NO:4 and SEQ ID NO:5;

- (c) SEQ ID NO:6;
- (d) SEQ ID NO:7;
- (e) SEQ ID NO:8;
- (f) SEQ ID NO:9;
- (g) a mixture of SEQ ID NO:9 and SEQ ID NO:10;
- (h) SEQ ID NO:11;
- (i) SEQ ID NO:12;
- (k) SEQ ID NO:13;
- (l) SEQ ID NO:14;
- (m) SEQ ID NO:15;
- (n) SEQ ID NO:16; and
- (o) SEQ ID NO:28.

13. (currently amended) The composition of claim 6, wherein the recombinant proteins comprise, or alternatively consist essentially of, or alternatively consist of mutant coat proteins of RNA-bacteriophages.

14. (currently amended) The composition of claim 13, wherein said RNA-bacteriophage is selected from the group consisting of:

- (a) bacteriophage Q $\beta$ ;
- (b) bacteriophage R17;
- (c) bacteriophage fr;
- (d) bacteriophage GA;
- (e) bacteriophage SP;
- (f) bacteriophage MS2;
- (g) bacteriophage M11;
- (h) bacteriophage MX1;
- (i) bacteriophage NL95;
- (k) bacteriophage f2;
- (l) bacteriophage PP7; and
- (m) bacteriophage AP205.

15. (currently amended) The composition of claim 14, wherein said mutant coat proteins of said RNA-bacteriophage have been modified by removal of at least one lysine residue by way of substitution.

16. (currently amended) The composition of claim 14, wherein said mutant coat proteins of said RNA-bacteriophage have been modified by addition of at least one lysine residue by way of substitution.

17. (currently amended) The composition of claim 14, wherein said mutant coat proteins of said RNA-bacteriophage have been modified by deletion of at least one lysine residue.

18. (currently amended) The composition of claim 14, wherein said mutant coat proteins of said RNA-bacteriophage have been modified by addition of at least one lysine residue by way of insertion.

19. (original) The composition of claim 1, wherein said second attachment site is capable of association to said first attachment site through at least one covalent bond.

Claims 20-21. (cancelled)

22. (currently amended) The composition of claim 1, wherein said A $\beta$ 1-6 peptide is selected from the group consisting of:

- (a) human A $\beta$ 1-6 peptide having an amino acid sequence of SEQ ID NO:75;
- (b) murine A $\beta$ 1-6 peptide having an amino acid sequence of SEQ ID NO:76;
- (c) primate A $\beta$ 1-6 peptide having an amino acid sequence of SEQ ID NO:84;

- (d) rabbit A $\beta$ 1-6 peptide having an amino acid sequence of SEQ ID NO:85;
- ~~(e) — xenopus laevis A $\beta$ 1-6 peptide having an amino acid sequence of SEQ ID NO:86;~~
- ~~(f)~~(e) rat A $\beta$ 1-6 peptide having an amino acid sequence of SEQ ID NO:87;  
and
- ~~(g)~~(f) guinea pig A $\beta$ 1-6 peptide having an amino acid sequence of SEQ ID NO:88.

23. (original) The composition of claim 1, wherein said A $\beta$ 1-6 peptide has an amino acid sequence of SEQ ID NO:75.

24. (original) The composition of claim 1 further comprising an amino acid linker, wherein said amino acid linker comprises, or alternatively consists of, said second attachment site.

25. (original) The composition of claim 1 or claim 24, wherein said second attachment or said amino acid linker with said second attachment site is bound to said A $\beta$ 1-6 peptide at its C-terminus.

26. (original) The composition of claim 1 or claim 24, wherein said second attachment site or said amino acid linker with said second attachment site is selected from the group consisting of:

- (a) GGC;
- (b) GGC-CONH<sub>2</sub>;
- (c) GC;
- (d) GC-CONH<sub>2</sub>;
- (e) C; and
- (f) C-CONH<sub>2</sub>.

27. (original) The composition of claim 1, wherein said A $\beta$ 1-6 peptide with said at least second attachment site is NH<sub>2</sub>-DAEFRHGGC-CONH<sub>2</sub> (SEQ ID NO: 77).

28. (currently amended) The composition of claim 27, wherein said virus-like particle is a virus-like particle of RNA-bacteriophage Q $\beta$  coat protein.

Claims 29-49. (cancelled)

50. (original) Composition of claim 1 for use as a medicament.

51. (cancelled)

52. (new) A method of treating Alzheimer and related diseases comprising administering the composition of claim 1 to an animal or human.

53. (new) The composition of claim 1, wherein said first attachment site is a lysine residue.

54. (new) The composition of claim 1, wherein said second attachment site comprises a sulfhydryl group.

55. (new) The composition of claim 1, wherein said second attachment site comprises a cysteine residue.

56. (new) The composition of claim 1, wherein said first attachment site is a lysine residue and said second attachment site is a cysteine residue.

57. (new) The composition of claim 1 or claim 24, wherein said second attachment site or said amino acid linker with said second attachment site is GGC or GGC-CONH<sub>2</sub>.